

In the Claims

1. - 22. (Cancelled)

23. (New) A particle separation apparatus comprising inlet means by which particle laden air is drawn into the apparatus, a cyclone particle separating means into which the particle laden air is drawn, a particle collecting chamber, a suction fan driven by an electric motor for drawing air through the apparatus, and a passage from the chamber to the fan, wherein the improvement comprises an opening in the passage upstream of the suction fan driving motor and downstream of the cyclone particle separating means, an air inlet and a valve between the air inlet and the opening which includes a valve closure and a valve seating against which the closure is normally resiliently urged to close the valve and prevent air flowing through the valve into the passage between the cyclone particle separating means and the fan, so that air pressure within the passage acts on one side of the closure while the other side of the closure is exposed to ambient air pressure, whereby in use if the air pressure in the passage leading from the cyclone particle separating means to the fan falls below ambient a pressure differential acts on the closure and creates a force which if the pressure differential is sufficient overcomes the resilient force acting thereon and the closure will become displaced from the seating and allow air to enter the passage and pass directly to the fan and fan motor to maintain an air flow to and around the fan motor.

24. (New) Apparatus as claimed in claim 23 further comprising a resiliently deformable member acting on the one side of the closure to generate the resilient force acting on the closure whereby it is urged into its closed position.
25. (New) Apparatus as claimed in claim 23 further comprising a hollow housing in which the closure is located, resiliently deformable spring means which acts between the closure and one end of the housing, and an opening in an opposite end of the housing defining the valve seating, and the area of the opening is smaller than the closure.
26. (New) Apparatus as claimed in claim 23 further comprising a hollow housing in which the closure is located, resiliently deformable spring means which acts between the closure and one end of the housing, an opening in an opposite end of the housing defining the valve seating wherein the area of the opening is smaller than the closure, an elongate guide which extends from the closure, and a further opening in the said one end of the housing within which the guide is a sliding fit.
27. (New) Apparatus as claimed in claim 23 wherein the closure has a curved surface for contacting and sealing against the seating.
28. (New) Apparatus as claimed in claim 23 wherein the closure has a conical surface for contacting and sealing against the seating.

29. (New) Apparatus as claimed in claim 23 wherein the closure has a frusto-conical surface for contacting and sealing against the seating.
30. (New) Apparatus as claimed in claim 23 wherein the seating comprises a ring of resiliently deformable material so that an airtight seal is created when the closure is pressed thereagainst.
31. (New) Apparatus as claimed in claim 23 wherein the closure is a hollow ball.
32. (New) Apparatus as claimed in claim 23 wherein the closure is spherical and is formed from low-density plastics material.
33. (New) Apparatus as claimed in claim 23 wherein the closure is a hollow ball which includes at least one opening in a region of the wall thereof which is remote from the region of the wall which co-operates with the valve seating, so that the pressure within the hollow interior of the ball is always the same as the pressure within the housing.
34. (New) Apparatus as claimed in claim 23 further comprising a hollow housing within which the closure is located, resiliently deformable spring means which acts between the closure and one end of the housing, an opening in the opposite end of the housing defining the valve seating, the area of the opening being smaller than the closure, an elongate guide which extends from the closure, and a further opening in the said one end of the housing within

which the guide is a sliding fit, wherein the guide is hollow and open at both ends to communicate between the interior of the ball and the passage, whereby ambient air released into the housing due to a pressure differential acting on the ball sufficient to unseat the ball from the valve seating, can pass from the housing via the ball and interior of the guide to the passage between cyclone and fan, to increase the air flow to and around the motor.

35. (New) Apparatus as claimed in claim 23 further comprising a hollow housing within which the closure is located, resiliently deformable spring means which acts between the closure and one end of the housing, an opening in the opposite end of the housing defining the valve seating, the area of the opening being smaller than the closure, an elongate guide which extends from the closure, a further opening in the said one end of the housing within which the guide is a sliding fit, and at least one additional opening in the said one end wall of the housing to communicate between the interior of the housing and the passage, through which ambient air can pass when the closure moves away from the valve seating to open the valve, to increase the airflow to and around the motor.

36. (New) Apparatus as claimed in claim 23 further comprising a hollow housing within which the closure is located, resiliently deformable spring means which acts between the closure and one end of the housing, an opening in the opposite end of the housing defining the valve seating, the area of the opening being smaller than the closure, and wherein the housing is formed from two cylindrical parts, one part having an end wall containing an opening defining the valve seating and its other end is open, and the other part having an end wall

containing an opening which communicates with the said passage and its other end is open, and the two open ends of the two parts are adapted to be joined the one to the other, so that the two parts extend coaxially to form the said housing.

37. (New) Apparatus as claimed in claim 23 further comprising a hollow housing within which the closure is located, resiliently deformable spring means which acts between the closure and one end of the housing, an opening in the opposite end of the housing defining the valve seating, the area of the opening being smaller than the closure, an elongate guide which extends from the closure, a further opening in the said one end of the housing within which the guide is a sliding fit, and wherein the housing is formed from two cylindrical parts, one part having an end wall containing an opening defining the valve seating and its other end is open, and the other part having an end wall containing an opening in which the guide is a sliding fit and its other end is open, and the two open ends of the two parts are adapted to be joined the one to the other, so that the two parts extend coaxially and form the housing, and wherein the guide includes a passage through which air can pass to provide for airflow between the housing and the passage between the cyclone and the fan.

38. (New) Apparatus as claimed in claim 23 further comprising a hollow housing within which the closure is located, resiliently deformable spring means which acts between the closure and one end of the housing, an opening in the opposite end of the housing defining the valve seating, the area of the opening being smaller than the closure, an elongate guide which extends from the closure, a further opening in the said one end of the housing within which

the guide is a sliding fit, a port in a wall which defines the passage between the cyclone and the fan, which port is adapted to accommodate said one end of the housing thereby to attach the housing to the apparatus, and an opening in the said one end wall of the housing which enables airflow between the housing and the said passage via the said port.

39. (New) Apparatus as claimed in claim 23 further comprising a hollow housing within which the closure is located, resiliently deformable spring means which acts between the closure and one end of the housing, an opening in the opposite end of the housing defining the valve seating, the area of the opening being smaller than the closure, an elongate guide which extends from the closure, a further opening in the said one end of the housing within which the guide is a sliding fit, a port in a wall which defines the passage between the cyclone and the fan, which port is adapted to accommodate said one end of the housing thereby to attach the housing to the apparatus, and a second passage through the guide which enables airflow between the housing and the passage between the cyclone and the fan via the said port.

40. (new) Apparatus as claimed in claim 23 further comprising a hollow housing within which the closure is located, an opening in an end of the housing defining the valve seating, the area of the opening being smaller than the closure, an elongate guide which extends from the closure, a further opening in the other end of the housing within which the guide is a sliding fit, and further comprising a helical spring fitted around the elongate guide which latter is freely slidable relative to the spring and acts between the closure and one end of the housing to urge the closure into sealing contact with the seating.

41. (New) Apparatus as claimed in claim 23 wherein the closure is a hollow ball, and the apparatus includes a hollow housing within which the ball is located, a resiliently deformable helical spring in the housing which acts between the ball and one end wall of the housing, first opening in an opposite end wall of the housing the area of which is smaller than the ball and which defines the valve seating, an elongate guide which extends from the ball, a second opening in the said one end of the housing within which the elongate guide is a sliding fit, wherein the spring is fitted around the elongate guide and the latter is freely slidable relative to the spring, whereby in use when the closure is moved away from the valve seating due to an increase in pressure differential across the valve, as will occur when a blockage or partial blockage occurs upstream of the passage between cyclone and fan, the guide slides relative to and through the said another opening in the said one end of the housing and the spring becomes compressed between the closure and the said one end of the housing, and the compression stores energy in the spring which creates a restoring force acting on the closure to move the latter back into sealing engagement with the valve seat when the pressure differential drops, as will occur when a blockage is cleared or after the fan motor is switched off.